

REMARKS

Claims 1-15 are pending in this application. Claims 1-15 are rejected. Claim 1 is amended hereby.

Responsive to the rejection of claims 1 and 6-15 under 35 U.S.C. § 103(a) as being obvious by U.S. Patent No. 5,223,090 (Klungness et al.) in view of Smook (Handbook for Pulp & Paper Technologists), Applicant respectfully traverses this rejection and submits that claims 1 and 6-15 are now in condition for allowance.

Klungness et al. '090 disclose a method for fiber loading a chemical compound where calcium oxide (lime) or calcium hydroxide is mixed with dewatered crumb pulp having the desired level of moisture (column 6, lines 8-10). Dewatered crumb pulp is utilized which contains less moisture than the free moisture level (column 6, lines 47-49). (Emphasis added). The carbon dioxide is added at a level sufficient to cause complete reaction of the chemical with the gas to form the water insoluble chemical compound (column 6, lines 38-40). In the case of paper pulp, the paper pulp can be immediately transferred to a papermaking operation where it is formed into a slurry, refined and placed onto a Fourdrinier machine or other suitable papermaking apparatus (column 6, lines 56-59). Alternatively, the paper pulp having the chemical compound loaded therein may be further dried and shipped as an item of commerce to a papermaking facility for subsequent usage (column 6, lines 60-63). Dewatered crumb pulp is utilized which contains less moisture than the free moisture level (column 6, lines 47-49). (Emphasis added).

Smook discloses, in integrated mills, pulp is usually stored at 10 – 14% consistency before use on the paper machine, and for non-integrated operations, the pulp must be further dewatered to decrease transportation costs (p. 126).

In contrast, claim 1 recites in part: “loading the undried pulp with an additive by way of a chemical precipitation reaction . . .”. (Emphasis added). Applicant submits that such an invention is neither taught, disclosed or suggested by Klungness et al. ‘090 and Smook, or any of the other cited references, alone or in combination, and includes distinct advantages thereover.

Klungness et al. ‘090 disclose a method for fiber loading a chemical compound where calcium oxide (lime) or calcium hydroxide is mixed with dewatered crumb pulp. Smook discloses, in integrated mills, pulp is usually stored at 10 – 14% consistency before use on the paper machine, and for non-integrated operations, the pulp must be further dewatered to decrease transportation costs. The Examiner states that the pulp used in Klungness et al. ‘090 has a moisture content up to 95% (page 4); however, Klungness et al. ‘090 nevertheless discloses dewatered crumb pulp and for a pulp to be dewatered it must be dried therefore Klungness et al. ‘090 does not disclose the use of undried pulp. Additionally, as supported by Srivatsu et al. ‘205 (see below), pulp which is not dewatered (undried) has fibers containing from about 99.9% to 95% water which is opposite the range stated by Klungness et al. ‘090. Klungness et al. ‘090 and Smook fail to disclose or suggest loading the undried pulp with an additive by way of a chemical precipitation reaction.

The present inventive combination of the fiber pulp production with the loading process provides improved paper qualities. Since no drying occurs between the pulp production process and the loading process, more calcium hydroxide or calcium oxide can penetrate through the fiber walls, thereby allowing a greater filler content at the inner cell wall surfaces to be achieved after the precipitation process, and increasing the desired effect through loading. Compared with fiber pulp to which filler (calcium carbonate) was added in the conventional method, the consistencies, optical characteristics, the specific volume (cm³/g) and the porosity, as well as the formation of

the produced paper can be increased or improved.

For all of the foregoing reasons, Applicant submits that claim 1, and claims 6-15 depending therefrom, are now in condition for allowance, which is hereby respectfully requested.

Responsive to the rejection of claims 2-5 under 35 U.S.C. § 103(a) as being obvious by U.S. Patent No. 5,223,090 (Klungness et al.) in view of U.S. Patent No. 6,602,385 (Drummond) or U.S. Patent No. 6,436,238 (Pitkanen), Applicant respectfully submits that claim 1 is distinguished from the cited art including Klungness et al. '090, Drummond '385 and Pitkanen '238 as described above. Therefore, any dependent claims including claims 2-5, are distinguished from the cited art including Klungness et al. '090, Drummond '385 and Pitkanen '238. For all of the foregoing reasons, Applicant submits that claim 1, and claims 2-5 depending therefrom, are now in condition for allowance, which is hereby respectfully requested.

Responsive to the rejection of claims 1-3, 6-11, 13 and 15 under 35 U.S.C. § 103(a) as being obvious by U.S. Patent No. 5,665,205 (Srivatsu et al.) in view of Smook (Handbook for Pulp & Paper Technologists), Applicant has amended claim 1, and submits that claims 1-3, 6-11, 13 and 15 are in condition for allowance.

Srivatsu et al. '205 disclose that a high level of filler is deposited in secondary fiber pulp by high-shear mixing of the secondary fiber pulp with a water-insoluble or low-soluble alkaline salt, such as calcium oxide or calcium hydroxide (lime) (column 2, lines 43-47). The pulp is not dewatered (water removed below the free moisture level) but preferably has a consistency of anywhere from about 0.1% to 5% (fibers containing from about 99.9% to 95% of moisture) (column 2, lines 50-53). The calcium oxide or calcium hydroxide is mixed with the secondary fiber pulp in a separate step or in a gas-liquid contactor apparatus (column 2, lines 54-57).

Carbon dioxide gas is contacted with the mixture while it is being mixed, such as by sparging the gas through a distributor plate in the apparatus (column 2, lines 60-63).

In contrast, claim 1, as amended, recites in part: “loading the undried pulp with an additive by way of a chemical precipitation reaction . . . drying the pulp after said loading step . . .”. (Emphasis added). Applicant submits that such an invention is neither taught, disclosed or suggested by Srivatsu et al. ‘205 and Smook, or any of the other cited references, alone or in combination, and includes distinct advantages thereover.

Srivatsu et al. ‘205 disclose that a high level of filler is deposited in secondary fiber pulp with a water-insoluble or low-soluble alkaline salt, such as calcium oxide or calcium hydroxide, that the pulp is not dewatered, and that carbon dioxide gas is contacted with the mixture. Smook discloses, in integrated mills, pulp is usually stored at 10 – 14% consistency before use on the paper machine, and for non-integrated operations, the pulp must be further dewatered to decrease transportation costs. However, Srivatsu et al. ‘205 and Smook fail to disclose or suggest loading the undried pulp with an additive by way of a chemical precipitation reaction and drying the pulp after the loading step.

Advantages of the present invention include that since the drying occurs after the loading step, more calcium hydroxide or calcium oxide can penetrate through the fiber walls, thereby allowing a greater filler content at the inner cell wall surfaces to be achieved after the precipitation process, and increasing the desired effect through loading. Compared with fiber pulp to which filler (calcium carbonate) was added in the conventional method, the consistencies, optical characteristics, the specific volume (cm³/g) and the porosity, as well as the formation of the produced paper can be increased or improved.

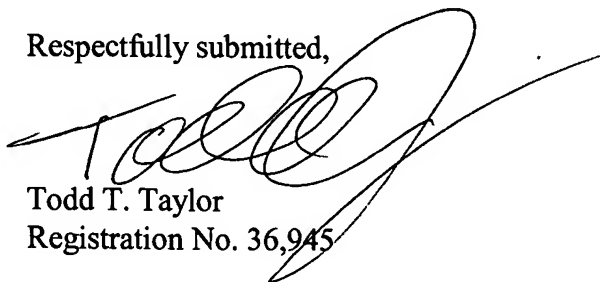
For all of the foregoing reasons, Applicant submits that claim 1, and claims 2, 3, 6-11, 13 and 15 depending therefrom, are now in condition for allowance, which is hereby respectfully requested.

For the foregoing reasons, Applicant submits that no combination of the cited references teaches, discloses or suggests the subject matter of the amended claims. The pending claims are therefore in condition for allowance, and Applicant respectfully requests withdrawal of all rejections and allowance of the claims.

In the event Applicant has overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, Applicant hereby conditionally petitions therefor and authorizes that any charges be made to Deposit Account No. 20-0095, TAYLOR & AUST, P.C.

Should any question concerning any of the foregoing arise, the Examiner is invited to telephone the undersigned at (260) 897-3400.

Respectfully submitted,



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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being transmitted via facsimile to the U.S. Patent and Trademark Office, on: October 10, 2005

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